

S/N 09/606,478

PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| Applicant: | MAN ET AL. | Examiner: | E. ELHILO |
| Serial No.: | 09/606,478 | Group Art Unit: | 1751 |
| Filed: | JUNE 29, 2000 | Docket No.: | 163.1357US01 |
| Title: | STABLE LIQUID ENZYME COMPOSITIONS WITH ENHANCED ACTIVITY | | |

Declaration of Victor Man

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

I, Victor F. Man, Ph.D., declare as follows:

1. I am an inventor of the above-identified patent application and an employee of Ecolab, Inc., the assignee of the above-identified patent application. I have a B.S. in Chemistry from the University of Wisconsin-Oshkosh and a Ph.D. in Chemistry from the University of Wisconsin-Madison. My title at Ecolab is Senior Scientist. I have been an employee of Ecolab, Inc. for 13 years.
2. I have authored 8 scientific publications. I have 13 years of experience developing cleaning compositions and am an inventor on 26 patents. In particular, I have approximately 5 years of research and development experience with enzyme containing cleaning compositions.
3. I have read and understood the Office Action mailed January 2, 2003 in this patent application. I understand that the Examiner suggests showing results with compositions of this invention that are unexpected compared to the compositions disclosed in the Linard et al. reference. The following experiments were conducted under my supervision.
4. The present patent application includes Examples at pages 43-46 and Figures 1-3 that established that the presently claimed compositions increase stability and activity of detergent enzymes.
5. We made the following compositions according to the Linard et al. reference and including up to 10 wt-% borate salt (Table).

Table

| Ingredient | Borax Composition 1 (Wt-%) | Borax Composition 2 (Wt-%) | Borax Composition 3 (Wt-%) |
|---|----------------------------|----------------------------|----------------------------|
| Borax Pentahydrate | 3.06 | 6.5 | 10 |
| Deionized Water | 56 | 53 | 49 |
| CaCl ₂ (to provide for 0.01 % Ca ⁺⁺) | 0.04 | 0.04 | 0.04 |
| Sodium LAS Flake | 10 | 10 | 10 |
| Sodium LES | 6 | 6 | 6 |
| Neodol 25-9 | 8 | 8 | 8 |
| Ethanol | 0.8 | 0.8 | 0.8 |
| MEA | 2 | 2 | 2 |
| TEA | 2 | 2 | 2 |
| Propylene Glycol | 4 | 4 | 4 |
| Sodium Citrate Dihydrate | 7 | 7 | 7 |
| Alkaline Protease | 1 | 1 | 1 |
| Total | 100 | 100 | 100 |

The Linard et al. reference discloses employing a sodium salt of boric acid, borax pentahydrate, as the borate. Borax Composition 1 includes 3.06 wt-% borax, which is the same as in the Linard et al. Composition Number 1 (found in the table at column 9, line 50, through column 10, line 10, of Linard et al.). Borax Composition 2 includes 6.5 wt-% borax. Borax Composition 3 includes 10 wt-% borax. The other ingredients are according to Composition Number 1 of the Linard et al. reference.

6. A meaningful evaluation of the stability of the enzyme in the Linard et al. borax compositions required that these compositions be physically stable for the duration of the evaluation of enzyme stability. By physically stable, we mean that components of the composition do not separate or form precipitate. Therefore, we first determined whether the Linard et al. borax compositions would be physically stable during any enzyme stability test. If the Linard et al. borax compositions are not physically stable, they are not suitable for a meaningful determination of their enzyme stability over time.

7. Each of the Linard et al. borax compositions was allowed to sit at ambient temperature in a closed container for two days. Each of the Linard et al. borax compositions formed a precipitate by the end of those two days. The borax pentahydrate came out of solution. At higher concentrations (6.5 wt-% and 10 wt-%), it was very apparent that most of the borax pentahydrate did not go into solution. I conclude from this that the Linard et al. borax compositions do not possess sufficient physical stability for a meaningful determination of their enzyme stability over time.
8. Also, it cannot be over-emphasized that liquid compositions of the Linard et al. reference, with such poor physical stability, have very limited, if any, commercial viability.
9. In contrast, the compositions described in the present claims are physically stable and maintain enzyme stability during prolonged storage. This result is unexpected in light of the physical instability of the Linard et al. borax compositions.
10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the likes so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

4/3/2003
Date

By Victor F. Man
Victor F. Man, Ph.D.